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ABSTRACT

This paper develops a conceptual framework for identifying organizational change and applies the framework to understanding organizational change. The main focus of the framework is the concept of "leading parts." Leading parts may be dominant or catalytic in their impact on systems; and understanding their operation requires analysis of the context in which they exist, the nature of the leading part itself, the nature of the other system parts relevant to the change, the "amplification mechanisms" available to the leading parts, and of the "homeostatic mechanisms" that seek to preserve the status quo. The analytic framework is then applied to two cases of organizational change in a high school, some of the implications of the framework for researchers and change agents are discussed, and the framework is compared to Lewin's force field analysis. (Author)

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"LEADING PARTS" AND ORGANIZATIONAL CHANGE[1]

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"LEADING PARTS" AND ORGANIZATIONAL CHANGE

Introduction

This symposium focuses on the phenomenon of change as it occurs at different levels of organizational functioning. This paper is particularly concerned with change at the interpersonal and group levels, but much of the conceptual framework suggested is applicable to other levels as well.

More specifically, this paper springs from experience in an organizational development project with a private high school. On several occasions during that project we were startled to find that important changes were being touched off by unexpected agencies. This paper has evolved from attempts to understand those events.

I will talk first about the conceptual background of the term "leading part," and then describe a framework for analyzing and guiding systemic change. The framework is expected to serve several purposes, including: (1) ordering information collected in a preliminary diagnosis of the organization, (2) guiding further data collection, and (3) indicating critical points for intervention. I will apply the framework to help explain two incidents from our work with the school, and discuss its implications with respect to further field work and other conceptual frameworks.

Leading Part Analysis

There is some confusion in the (miniscule) theoretical literature about the definition of "leading parts". Emery (1967) offers a dual definition that captures some of this confusion; he suggests that a leading part is:

> (The) part . . . whose goals tend to be subserved by the goals of the other parts or whose goal achievements at $+_o$ tend to determine the goal achievements of all the parts at t_+. (Emery, 1967, p. 208)

The first half of this definition suggests that the leading part dominates the rest of the system in a pervasive fashion. This view of leading parts as a dominant force in the system also appears in some of von Bertalanffy's (1968) writing. He describes the development of any system as an interplay between the "principle of progressive segregation" and the "principle of progressive centralization." The first principle leads to increasing differentiation of the system's parts. Theoretically this differentiation process is only limited by eventual independence of the parts, though such independence would reduce the system to a "heap" of unrelated components. In contrast, operation of the principle of centralization involves increasing dominance of the system by a single part, a process whose theoretical limit is attained when all parts are related only to the leading part. Practically, the nature of living systems and the extent to which they are governed by leading parts is determined by the interplay between the two principles (von Bertalanffy, 1968, p.73).

The second half of Emery's definition allows for the possibility of a leading part as a specific catalyst of change. Such a leading part might be highly influential in some sorts of change and less so in others. Von Bertalanffy has also spoken of leading parts in terms consistent with this definition:

> Such centers may exert "trigger causality," . . . a small change in a leading part may by way of amplification mechanisms cause large changes in the total system. (1968, p. 213).

The influence of catalytic leading parts is less pervasive than that of dominant leading parts, and more specific to particular contexts. In consequence they are more difficult to identify than dominant leading parts, whose operation would be constantly obvious.

Organizations, like other systems, are subject to the principles of segregation and centralization. Differentiation into subsystems to deal with different elements of organizational tasks is part of the raison d'etre of the organization, and virtually all organizations that are more than minimally differentiated face the problems of coordination of effort that require some form of centralization. Most organizations are characterized by both differentiated subsystems ("segregation") and centers of control and integration ("centralization"). (See Katz and Kahn, 1966, Lawrence and Lorsch, 1965).

Typically, dominant leading parts are established in formal organizational structures to deal with recurrent problems of coordination and integration. Catalytic leading parts, in contrast, can be expected to emerge in non-routine situations, or where the routinized solutions are proving inadequate. They may either become institutionalized and dominant over time, or become quiescent after the immediate problem is solved.

This paper is concerned with the definition and analysis of the operation of leading parts in general as a means of implementing systematic planned change. The framework involves searching for answers to several questions:

1. In what context is the analysis performed?
2. What is the relevant leading part, and what are its characteristics?

3. What other parts of the system are relevant?
4. What patterns of relationship link the parts?
   a. What "amplification mechanisms" are involved?
   B. What "homeostatic mechanisms" are involved?

The context of the potential change is critical. Before leading part analysis becomes applicable, a preliminary diagnosis of the system and its operation are required. Definition of the proposed change and its expected consequences are part of the context, as is the relevant history of the system. What is an important leading part in the context of one change may be irrelevant to another.

In organizations, clear understanding of the context allows decision about what subsystems are relevant and what impacts they may have. The formal organization structure, for example, defines leading parts for some contexts. In others, the informal structure is more relevant. In some contexts it is not immediately obvious whether relevant leading parts exist, or how they can be identified. Without some preliminary knowledge of the system and its past operations, the rest of the analysis is impossible.

Unambiguous definition of the relevant leading part and its characteristics is seldom simple. Definition requires information about the way systems have responded to similar situations in the past. In all but the most thoroughly understood systems, identifying a leading part for a future change involves some "educated guessing" on the basis of past performance. When the investigator is looking for catalytic leading parts that may respond to an entirely new situations, the process of definition becomes even more difficult.

Similarly, identification of other relevant parts is often ambiguous and seldom exhaustive. But at a minimum the "target" of the leading part's involved need to be understood if the impacts of any change are to be anticipated.

Some aspects of organizations are easily identified. Formal structure, for example, can present explicitly and elegantly the connections and boundaries between parts of the system in "tables of organization". Unfortunately, few organizational changes involve the formal structure alone, as many organizational planners have discovered expensively. Many efforts at planned change have run aground on the informal structure (see Argyris, 1964), or the fit between the social and technical subsystems (see Trist and Bamforth, 1951), neither of which is adequately described by a "table of organization." Identification of the relevant parts may require both organizational diagnosis and investigation of previous change attempts (particularly failures) to discover what is <u>really</u> important.

Attempts to describe the <u>patterns of relationships</u> among parts of a system assume a minimal level of differentiation and interaction between those parts. Interaction suggests that some exchange of information, energy or materials occurs between parts and that some mutual influence is a result. There are two aspects of this interaction that bear closer attention: (a) the "amplification mechanisms" that make it possible for the leading part to have a disproportionate impact on the other parts interacting with it, and (b) the "homeostatic mechanisms" that are inevitably invoked by threatened changes in the system's steady state.

Implicit in the concept of "<u>amplification mechanisms</u>" is an important asymmetry. Transmission through such a mechanism has more impact at one terminal than at the other; the "following part" is more affected by communication and interaction than the "leading part". Understanding the quality of that asymmetry is fundamental to understanding the operation of leading parts.

A vast amount of attention has been paid to influence processes, both within and outside the organizational context. Cartwright (1965) has listed four major classes of influence: (1) influence through physical control, e.g. physical coercion, (2) influence through control over costs and gains, e.g. bribery, (3) influence through control over information, e.g. persuasion, and (4) influence through use of the influencee's attitude to the influencer, e.g. authority. (March, 1965, pp. 12-13). The formal "bosses" in the organization typically influence employees through costs and gains (salaries) and through the legitimacy of their role in the hierarchy (authority). Employees, on the other hand, can influence their superiors through control over information (persuasion) and control over costs and gains (strikes). The form of influence critical to the leading part function depends on the organizational context and the parts involved.

Whatever the form of influence exercised by the leading part, change in any stable system automatically elicits pressures to restore the previous steady state. These "homeostatic mechansisms" are vital to the survival of the system over the long term, but they also inhibit any movement toward change. A leading part cannot set off changes in the larger system without somehow dealing with the organism's automatic maintenance responses.

Homeostatic pressures in organizations can take several forms. Cartwright (1959) distinguishes between "opposition to an influence attempt" and "resistance generated by an influence attempt". (March, 1965, pp. 23-33). The former amounts to response to the proposed change while the latter is a response to the process by which the change is introduced. An attempt by organizational authorities to impose a change on their subordinates might be undermined because subordinates disagreed with the content of the change or because they resent and so resist and process of imposition.

These questions and their answers provide a framework for understanding some implications of the change process. The context, the relevant organizational parts, and their interrelations all influence implementation at change. The framework can guide further data collection and also suggest economical strategies for introducing a given change.

Leading Parts Analysis and Organizational Change

In the two cases that follow, I will apply leading parts analysis to two cases of change intervention in an organizational development project in a boys' boarding school. Both cases involve leading parts that are not immediately obvious in the formal structure of the organization. For each case, I will offer (1) some general background, (2) the leading parts analysis, and (3) a brief description of the events that occurred during and after the change.

The first case involved the process of feeding back preliminary results of an organizational diagnosis that had been in progress for several months during which many of the faculty and students had been interviewed or asked to fill out questionnaires. The preliminary findings suggested that living at the school had a substantial negative impact on the students in terms of satisfaction, involvement in school life, and a number of other dimensions. It also appeared that this negative impact was linked to the quality of interaction among students in their life together. We planned a series of feedback meetings that were intended to validate and elaborate the preliminary diagnosis at a minimum. We also hoped that there might be an opportunity for some immediate problem-solving in the meetings.

We invited participants to the feedback meetings on the basis of residence, since it appeared that many of the problems had roots in dormitory life. Each feedback meeting was composed of students, most of whom were from a single grade, faculty members who lived with them, and in some cases the senior "monitors" who shared responsibility for school rule enforcement with the resident faculty members. Fundamentally, the hope of the feedback meetings was to enlist the participation of both students and faculty in working to solve the problems of the community.

The feedback meetings were planned as a transitional intervention to bridge the gap between data collection and explicit organizational development interventions. We did not expect massive changes as a consequence. To the extent that immediately obvious leading parts were present the faculty and the monitors were clearly defined as influential by school norms. We also hoped that some students might act as catalysts.

The students, of course, are highly relevant to life in the dormitories. They were also the major targets for change in this particular intervention, since our hope was to involve them as well as the faculty and the monitors in behavior changes.

The faculty and the monitors possessed some influence from their positions in the school structure as well as whatever personal influence they could mobilize. Thus they exercised some control over information, rewards, and the physical fates of the students. The students, on the other hand, had some control over information and over the rewards available to faculty and monitors.

The general impact of the feedback meetings on participants was unequivocally positive. Questionnaire data collected two weeks after each

feedback meeting revealed an increase in participant involvement in school affairs that was significantly greater than that of non-participants. When participant scores on involvement change after two weeks were correlated with their immediate reactions to the meetings, however, there were no significant relationships. Change could not be predicted on the basis of individual reactions to the meetings. Group change in involvement, however, was significantly related to group reactions to the meetings. Furthermore, the best predictor of group change was the expected future energy commitment of a small subsample (less than 17 per cent) of student "leaders"[2]. Though change in involvement was not related to group future energy commitment (rho = .25, n.s.), it was strongly related to the future energy commitment of the "leaders" (rho = .85, $p < .01$). The group means future energy commitment and involvement change, and the student "leaders" mean on future energy commitment are reported in Table 1.

In short, the change in involvement was set off by influential students in the groups. The faculty and the monitors did not contribute to the relationship between the future energy commitment of student leaders and the change in group involvement. On the contrary, when the faculty and the monitors reactions are figured into the data, their responses obscure the relationship (rho = .21, n.s.). In this situation, positive change in student involvement was related to the student "opinion leaders" within the groups rather than to the formal and established dominant leading parts. Catalytic leading parts emerged in connection with the new experience of being asked to solve for themselves some of the problems revealed by the preliminary diagnosis.

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[2]. Student "leaders" were defined as those group members who were selected three or more times by their dormitory mates as "an influence on me" in response to a request to list the three dormitory mates that fit that description.

Table 1

"Leaders" Future Energy and
Change in Involvement

			Group Future Energy[1]	n	Rank	"Leaders" Future Energy[1]	n	Rank	Change In Involvement[2]	n	Rank
I.	Freshmen	A	2.88	16	2	3.00	2	3	1.94	17	2
	Sophomores	A	2.33	3	3	.00[3]	0	8.5	.00	9	6
	Juniors	A	3.13	12	1	.00[3]	0	8.5	-.60	20	8
	Seniors	A	2.17	5	5	4.00	2	1	3.60	5	1
		B	1.25	7	8	1.00	1	7	-.75	4	9
	All classes	A	2.00	11	6	2.33	3	6	.08	13	5
II.	Freshmen	B	2.81	21	4	3.00	2	3	1.17	24	3
	Sophomores	B	1.23	39	9	1.14	7	5	-.23	22	7
	Juniors	B	1.88	8	7	3.00	1	3	.94	24	4

$rho_{GFE,CI} = .25$, n.s.

$rho_{LFE,CI} = .85$, $p < .01$

[1]Questionnaire administered immediately after feedback meetings.

[2]Questionnaire administered two weeks after feedback meeting.

[3]No leaders in these groups stayed throughout the feedback meetings to answer the questionnaire.

The second case concerns attempts made the following autumm to alter the culture of the school. One diagnostic finding was that the school tended to have a negative impact over time on levels of student satisfaction, involvement, learning and the like. Freshmen entered the school "bright-eyed and bushy tailed" and left it four years later apathetic, cynical and sarcastic. The diagnosis revealed that the deterioration of student morale was steepest during the freshmen year, though it was evident in subsequent years as well. It was also clear from the diagnosis that formally established leading parts of the system, like the Headmaster, had relatively little contact with freshmen. On the contrary, it appeared that the most powerful socialization agents for the younger students are other students. It also seemed clear that the present freshmen and their adaptation to the school will have a large impact on subsequent incoming classes.

More specifically, the focus in this case is on changing the way freshmen and upperclassmen interact together. Traditionally, upperclassmen have "hazed" new freshmen, particularly by throwing them into the school pond. The norms do not involve helping newcomers to adjust, and one year's victims wreak vengeance on the next year's.

The catalytic leading part for this effort to change student culture was the sophomores. The sophomores are at once the students closest in age and concerns to the freshmen, and their most ardent harrassers. They are important models as well as important hazers.

Other parts of the system relevant to the freshmen socialization process include the faculty, other upperclassmen, and other freshmen. The upperclassmen are generally amused by the hazing of freshmen; the faculty tends to deny that the practice exists. The other freshmen bully their classmates and wait eagerly for "next year."

The amplification mechanisms available to the sophomores for influencing freshmen include physical force, control of costs and gains, legitimacy of position as upperlcassmen, and, to a lesser degree, control over information. The hazing process involves physical force: gangs of sophomores roam the corridors in search of individual freshmen to throw in the pond. The change proposed would involve both means and ends of influence, and would lead to a new pattern of relations between the classes.

Homeostatic mechanisms operate from many different parts of the school. The change might present a break with tradition to upperclassmen, and so be opposed, and it could be construed as a comment on the character of previous classes, and so be resisted. Some faculty claimed that the existence of the hazing process was a result of the attention currently being paid it, and that without that attention it would not have existed. On the whole the mechanisms for preserving hazing practices tended to be persuasive and indirect.

The change process itself was initiated by two faculty members, who invited the sophomore class to a meeting before the arrival of the freshmen in the Fall to discuss the relations between them and the newcomers. At feedback meetings during the previous Spring, the freshmen (now sophomores) described the impact of the sophomore class on them as wholly negative. On considering their experience, the new sophomores decided to help rather than haze new freshmen. Several weeks later a subgroup of sophomores decided to renege and to reinstitute hazing by throwing freshmen in the pond, but the rest of the class stopped them. The sophomore class officers then formally apologized to the freshmen for their narrow escape. The long term impact of new behavior by the sophomores is not yet clear, but the potential for change in general student culture over the next few years is genuine. The use of a

catalytic leading part to touch off cultural change in this instance proved successful, at least in the short run.

Implications

Leading parts analysis, as defined in this paper, has focused conceptual attention on elements of a system that exert considerable influence within it. The analysis suggests that leading parts may be "dominant", long established powers in the system's organization, or they may be "catalytic", emerging in the context of new and non-routine problems that call for innovative solutions. The analysis emphasizes the importance of "context" in defining the leading part for a planned change intervention in place of preconceptions about what parts are dominant.

For organizational researchers this framework can be useful in ordering information gathered in a preliminary diagnosis. It may also direct attention to important information not available in the preliminary diagnosis. Finally, it suggests foci for attention during attempts to implement planned change that may lead to further understanding of successful and unsuccessful intervention.

For practitioner of planned change, leading parts analysis provides a conceptual tool for directive organizational diagnosis and intervention to economical points of entry and action. Successful identification and analysis of leading parts, both dominant and catalytic, should allow maximum organizational impact and development for minimum practitioner investment in time and energy.

It makes sense in closing to clarify the place of this framework in connection with other available conceptual tools. Leading parts analysis bears considerable resemblance, for example, to Kurt Lewin's "force-field

analysis." Although the framework owes a great deal to Lewin's work, there are several important distinctions between the two.

Lewin's framework encourages consideration of many different forces involved in changing a "quasi-stable equilibrium." It does not, however, provide a systematic framework for understanding the interrelations among those forces. The emphasis on the interrelations among system components in leading parts analysis, on the other hand, does focus attention on these connections.

Further, although Lewin's model has dynamic implications, it is fundamentally a "snapshot" approach to the problem that builds on static assumptions. Leading parts analysis, in contrast, is explicitly dynamic in its attention to the existence and interaction of amplification and homeostatic mechanisms.

Finally, and most importantly, the two models focus on different levels of specificity. Lewin's analysis is a very general one, and is most useful as a tool for describing a vast array of forces operating in a situation. It is less useful as a tool for understanding the complex interactions and events likely in a particular change attempt. Leading parts analysis, on the other hand, is very directly relevant to the phenomena surrounding the influence of a larger system by a single part. Both tools might be used sequentially: Lewin's analysis would be appropriate for organizing the masses of information in a preliminary diagnosis, while leading parts analysis is more suited to the understanding and guidance of specific interventions.

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